

Govt. KRG PG Autonomous College, Gwalior, MP
BCA – Session 2021-22

PAPER CODE BCA – 501

Differential Equations

UNIT-I

Differential Equations of First Order and First Degree:

Homogeneous Differential Equations, Reducible to Homogeneous Differential Equations, Linear Differential Equations, Reducible to Linear, Differential Equations, Bernoulli's Equation, Exact Differential Equations, Change of Variables.

Differential Equations of First Order and Higher Degree:

Differential Equations solvable for p, solvable for y, solvable for x, Clairaut's Equation.

UNIT-II

Family Of Curves:

Linear Differential Equations of Higher order with constant coefficients, Differential Equations reducible to Linear Differential Equations with Constant Coefficients, Simultaneous differential equation of first order..

UNIT-III

Partial Differential Equations:

Definition and Formation. Partial Differential equation of first order, Lagrange's method, standard forms, Charpit's Method, Linear Partial Differential Equation of Higher order with Constant Coefficients.

UNIT-IV

Linear Differential Equations of second order, Application of Partial differential equation : Method of separation of variables , Solution of One dimensional wave equation and one dimensional heat equation.

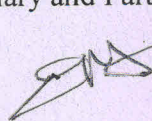
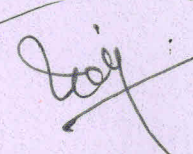
UNIT-V

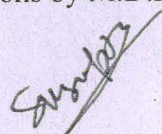
Series Solution of Differential Equations:

Power series method, Bessel and Legendre functions and their properties, Recurrence relations for Besseses function & Legendre function .


Recommended Books:

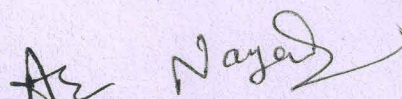
1. Partial differential equation by Snadden
2. Ordinary and Partial Differential Equations by M.D.Raisinghania








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PAPER CODE BCA – 502
Networking Concepts

UNIT 1-DataCommunication System: Purpose, Components : Source, transmitter, transmission System, receiver, and destination. Data transmission: Frequency, Spectrum and Bandwidth. Time-domain and frequency domain Concepts. Relationship between data-rate and Bandwidth.

UNIT 2-ANALOG AND DIGITAL DATA TRANSMISSION. DATA AND SIGNAL. ANALOG AND DIGITAL SIGNALING OF ANALOG AND DIGITAL DATA. MODEM, MODULATION TECHNIQUES, CODEC, DIGITAL TRANSMITTER ETC. TRANSMISSION IMPAIRMENTS :ATTENUATION AND ATTENUATION DISTORTION, DELAY DISTORTION, NOISE.

UNIT 3-Introduction to Network,,OSI reference model, TCP/IP reference model. Transmission Media: Magnetic Media, Twisted-Pair cables, Baseband & Broadband Coaxial cables, Fiber Optics. Wireless Transmission: Radio Transmission, Microwave Transmission.

UNIT 4-ISDN; ATM; DATA LINK LAYER: SERVICES, FRAMING, ERROR CONTROL, ERROR-DETECTING & CORRECTING CODES. DATA LINK PROTOCOLS: STOP-AND-WAIT PROTOCOL, SLIDING WINDOW PROTOCOL. HDLC; STATIC & DYNAMIC CHANNEL ALLOCATION IN LANs & MANs.

UNIT 5-Multiple Access Protocols: ALOHA, CSMA/CD; IEEE standards 1002.3 and Ethernet, 1002.4: Token Bus; 1002.5: Token Ring. Bridges, Routers, Gateways, Routing Algorithm, Congestion control Algorithm, Internetworking, The TCP/IP Protocol ,IP Addressing, Subnets.

Reference:

1. Computer Networks By Tanenbaum
2. Data&Computer Communications By Stallins.

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PAPER CODE BCA - 503
Introduction to E –Commerce

UNIT 1 : Introduction

Brief history of e-com , Elements of e-com, Types, Intermediaries and E-Commerce, Advantages & Disadvantages of e-com , E-Commerce practices Vs traditional business practices.

UNIT 2 : E-BUSINESS; E-BUSINESS Vs E-COMMERCE, EDI- WHO USE EDI, ORIGIN, BENEFITS , MIGRATION TO OPEN EDI-APPROACH , E-COM WITH WWW/INTERNET.

UNIT 3: Electronic communication& WWW

PC and networking , Network topologies and communication media , E-mail , OSI and TCP/IP Models , LAN, WAN, MAN, Internetworking – Bridges and gateways , What is Web(World Wide Web), Web Architecture, The Web and E-Com.

UNIT 4: Electronic Payment System:

Electronic payment system – Overview , Electronic or digital cash , Electronic Checks-Benefits , Online credit card based system , Debit card, Smart Cards.

UNIT 5: Security and Application

Need of computer security, Security strategies, Firewalls And Network security, Types of Firewalls, Transaction Security, Cryptography, Public key encryption, Private key encryption, Digital signatures, Digital Certificates, Secure Electronic Transaction(SET).

REFERENCE BOOKS:

- 1."Electronic Commerce(A Manager's Guide)" By Ravi Kalakota and Andrew B. Whinston.
- 2."Web Commerce Technologies Handbok"By Daniel Minoli & Emma Minoli
- 3."E-Commerce" By Dr.Varinder Bhatia

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PAPER CODE BCA – 504
Programming in Java

UNIT-I

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation. If statement; if...else... statement, Nesting of if...else... statements, else...if Ladder, Switch, ? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT-II

DEFINING A CLASS, ADDING VARIABLES AND METHODS, CREATING OBJECTS, ACCESSING CLASS MEMBERS, CONSTRUCTORS, METHODS OVERLOADING, STATIC MEMBERS, NESTING OF METHODS. INHERITANCE: EXTENDING A CLASS, OVERRIDING METHODS, FINAL VARIABLES AND METHODS, FINAL CLASSES, FINALIZE METHODS, ABSTRACT METHODS AND CLASSES, VISIBILITY CONTROL.

UNIT-III

ARRAYS: ONE DIMENSIONAL & TWO DIMENSIONAL, STRINGS, VECTORS, WRAPPER CLASSES, DEFINING INTERFACE EXTENDING INTERFACE, IMPLEMENTING INTERFACE, ACCESSING INTERFACE VARIABLE, SYSTEM PACKAGES, USING SYSTEM PACKAGE, ADDING A CLASS TO A PACKAGES, HIDING CLASSES.

UNIT-IV

CREATING THREADS, EXTENDING THE THREADS CLASS, STOPPING AND BLOCKING A THREAD, LIFE CYCLE OF A THREAD, USING THREAD METHODS, THREAD EXCEPTIONS, THREAD PRIORITY, SYNCHRONIZATION, IMPLEMENTING THE RUNNABLE INTERFACE.

UNIT-V

LOCAL AND REMOTE APPLETS VS APPLICATIONS, WRITING APPLETS, APPLETS LIFE CYCLE, CREATING AN EXECUTABLE APPLLET, DESIGNING A WEB PAGE, APPLLET TAG, ADDING APPLLET TO HTML FILE, RUNNING THE APPLLET, PASSING PARAMETERS TO APPLETS, ALIGNING THE DISPLAY, HTML TAGS & APPLETS, GETTING INPUT FROM THE USER.

TEXT & REFERENCE BOOKS:

JAVA COMPLETE REFERENCE – TMH PUBLICATIONS
JAVA VOLUME I & II – PEARSON EDUCATION

PROGRAMMING IN JAVA, 2ND EDITION, E. BALAGURUSWAMY, TMH PUBLICATIONS

PETER NORTON GUIDE TO JAVA PROGRAMMING, PETER NORTON, TECHMEDIA PUBLICATIONS

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ORACLE 8i

UNIT - I DIFFERENT DATA BASE MODEL ,RDBMS COMPONENTS – KERNEL, DATA DICTIONARY, CLIENT/SERVER COMPUTING AND ORACLE, OVERVIEW OF ORACLE ARCHITECTURE – ORACLE FILES, SYSTEM AND USER PROCESS, ORACLE MEMORY, ROLE OF DBA, SYSTEM DATA BASE OBJECT, PROTECTING DATA

UNIT - II SQL Plus, Oracle data types, Creation, Insertion, Updation, Deletion of tables, Modification of structure of tables, Removing, Deleting, Dropping of Tables, Data Constraints, Column level & table Level Constraints. Null, Unique Key, Default key, Foreign key, Check Integrity constraints. Defining different constraints on the table Defining Integrity Constraints in the ALTER TABLE Command, Select Command, Logical Operator, Range Searching, Pattern Matching, Oracle Function, Grouping data from Tables in SQL, Manipulation Data in SQL

UNIT-III Joining Multiple Tables (Equi Joins), Joining a Table to itself (self Joins), Subqueries Union, intereseat & Minus Clause, Creating view, Renaming the Column of a view, Granting Permissions, - Updation, Selection, Destroying view, Permission on the objects created by the user, GRANT statement, Object Privileges, Referencing a table belonging to another user, Revoking the permission given, Indexes

UNIT-IV PL/SQL, SQL & PL/SQL DIFFERENCES, BLOCK STRUCTURE, VARIABLES, CONSTANTS, DATATYPE, ASSIGNING DATABASE VALUES TO VARIABLES, SELECT ... INTO, CURSORS, USING FLOW CONTROL AND LOOP STATEMENT, GOTO STATEMENT, ERROR HANDLING, BUILT-IN EXCEPTIONS, USER DEFINED EXCEPTIONS, THE RAISE-APPLICATION-ERROR PROCEDURE, ORACLE TRANSACTION, LOCKS, IMPLICIT AND EXPLICIT LOCKING. 21

UNIT-V Procedures & Functions - Concept, creation, execution, advantages, syntax, deletion, Triggers - Concept, use, how to apply database triggers, type of triggers, syntax, deleting, Import, Export, Oracle backup and recovery

Recommended Books:

1. Ivan Bayross, "SQL, PL/SQL", BPB Publications"
2. Liebschuty, "The Oracle Cook Book", BPB Publication
3. Michael Abbey, Michael J. Corey, "Oracle a Beginners guide". TMH Publication
4. Oracle Unleashed (Chapter 1,2,3,4,5 and 9)

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